



The U.S. Navy's Task Force Climate Change & The Navy's Arctic Roadmap



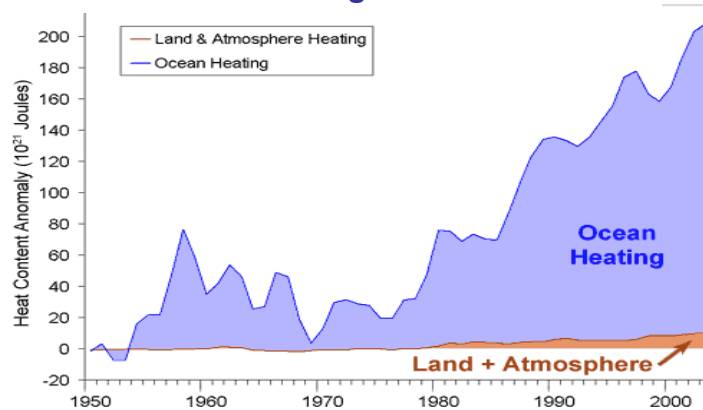
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June 2011

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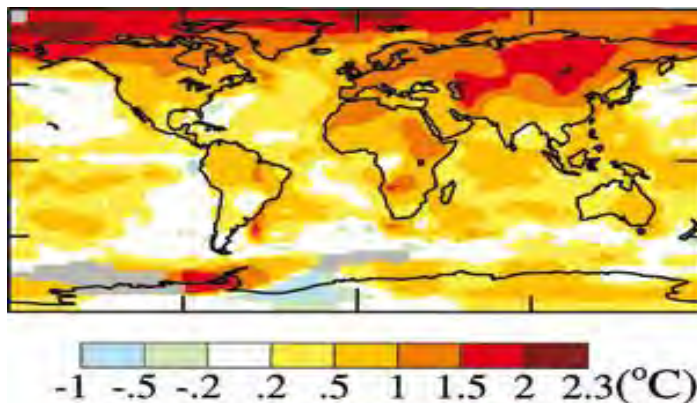
Climate Change Update

The Ocean is Storing Most of the Heat



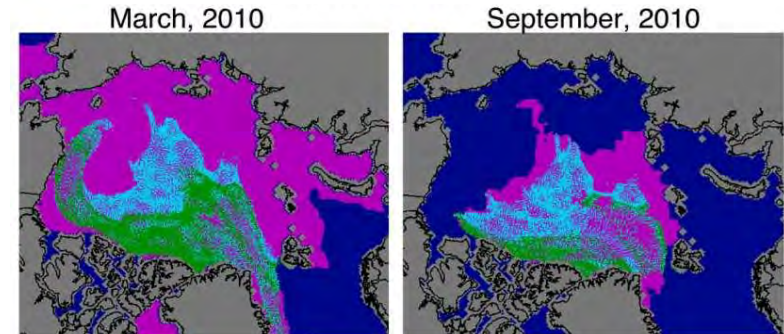
Total Earth Heat Content from 1950 (Murphy 2009). Ocean data taken from Domingues et al 2008

Arctic Warming is 2 x the Rest of the World



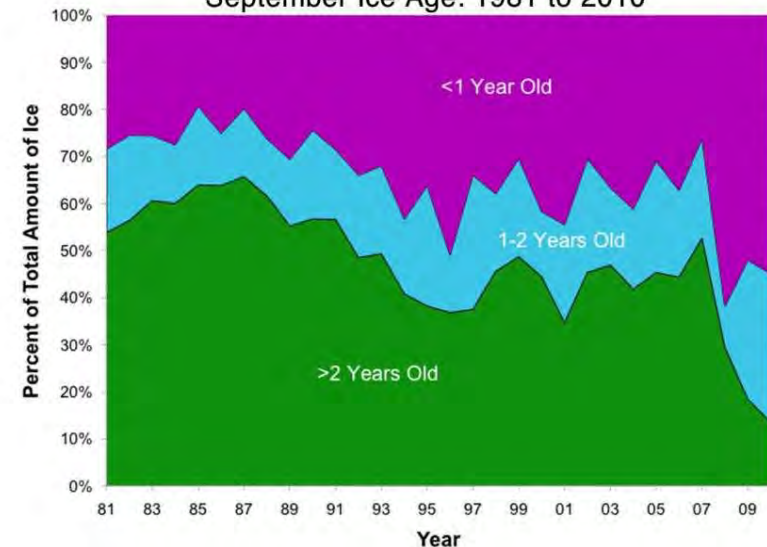
Mean surface temperature 2001-2007 relative to baseline period 1951-1980, from: The Copenhagen Diagnosis, 2009

Arctic Sea Ice Continues to Melt & Thin



First-year ice (<1 year old) Second-year ice (1-2 years old) Multiyear ice (>2 years old)

September Ice Age: 1981 to 2010



NSIDC courtesy J. Maslanik and C. Fowler, CU Boulder



Why the Navy Cares

Near-term

- Increasing Arctic maritime activity
- Partnership opportunities
- Energy security initiatives



Mid-Term

- Sea level rise impact on installations
- Water/resource challenges
- Potential increase in Humanitarian Assistance/Disaster Response

Wild-cards

- Ocean acidification
- Abrupt climate change
- Geoengineering



Challenges and opportunities exist



Task Force Climate Change

Establishment

Chief of Naval Operations
Executive Board on May 15, 2009



Composition

Navy, NOAA, USCG in core group with
Joint, interagency, international support



Charter

Global climate change impacts with **near term Arctic focus**



Navy's Arctic Experience

1926

*Admiral Byrd's first
Over-flight of North Pole*



1946

*USS Midway
tests carrier
capabilities*



1955-57

*Sealift support
to construct Distant
Early Warning (DEW) line stations*



1970's

*Cold weather Underway
Replenishment
experiments*



1990's

*Submarines continue
transits and research*



1942-45

*World War II:
Dutch Harbor,
Attu & Kiska*



1951-52

*Sealift support to enlarge
Thule Air Force Base*



1958

*Nautilus first
under-ice transit*



1984-85

*Arctic
undersea exercises*



2000's

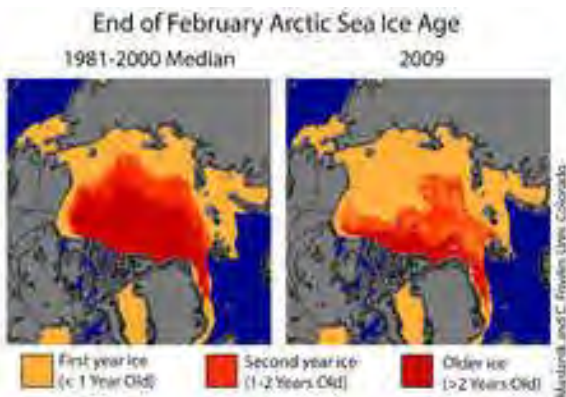
*Continuing Naval
exercises*





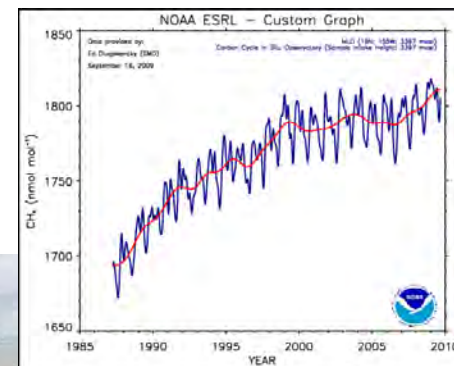
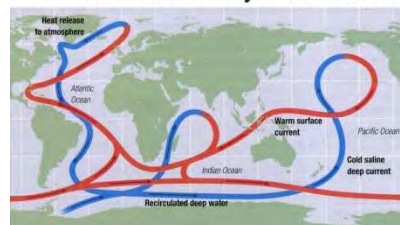
What is the Arctic?

It is an ocean



It is not a vacuum

Global Ocean Conveyor Circulation



It is changing





Arctic Considerations

Poorly Charted

Limited Infrastructure

Harsh Operating Environment

Security Concerns

Maritime boundary Disputes
US-Canada
Russia-Norway

Opportunities
Russia & China

Allied Perspective

Transportation Access

Shipping industry requirements

- > 8+ weeks of ice-free conditions
- > Not anticipated for at least 40 years

Concerns

- > Insurance
- > Charts
- > SAR
- > Governance
- > Reliable sea-ice forecasts
- > Ice-strengthened hulls
- > Environmental compliance

Native Perspectives

Gulf Coast, 2005



Unalakleet, 2040



One Scenario



+



=



The Arctic is an ocean, a challenge, but NOT a vacuum



Arctic Trends Assessment

Commercial activity remains limited through 2030

- Shipping, oil, & gas extraction to grow after 2030
- Tourism & maritime research will increase the most
- Fishing to grow but only gradually



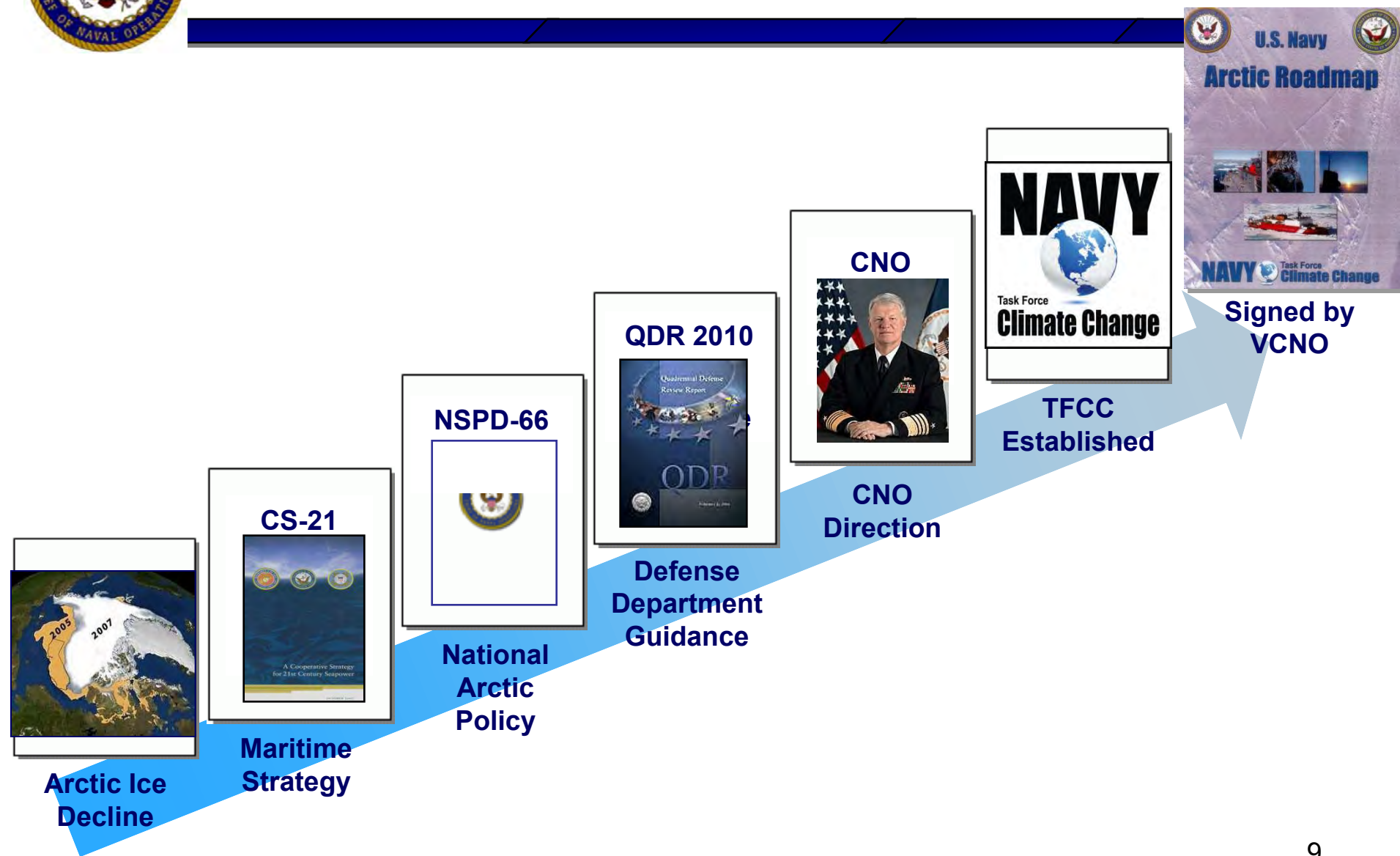
..but after 2050?



Harsh operating environment will remain the greatest limiting factor



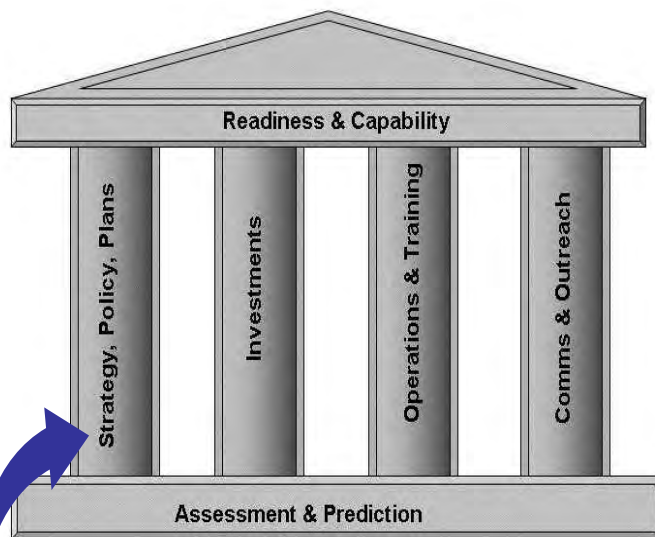
Arctic Drivers





Navy Arctic Roadmap

Framework



Composition



Execution

Phase 1 (FY10)

Fleet readiness assessment, external studies, strategic implementation plan

Advocate for UNCLOS^{ndact}

Monitor Polar SATCOM Program^{ndact}

Arctic TTX & LOE

POM-12 investments for air-ocean-ice numerical prediction

Phase 2 (FY11-12)

POM-14 CBA, NSP, & SPPs address the Arctic

Formalize expanded / new cooperative partnerships

Arctic SAREX, Arctic Edge, Northern Edge NANOOK^{ndact}

ICEX-11

Environmental assessments

Support National Ocean Policy / Marine Spatial Planning Implementation For Arctic^{ndact}

Interagency partnership for air-ocean-ice numerical prediction

Phase 3 (FY13-14)

Execute POM-14

Implement expanded / new cooperative partnerships

Arctic UUV operations

Update roadmap ICW QDR

Navy recognized as a valued joint, interagency, & international partner in the Arctic

^{ndact} Indicates recurring action



Recent Arctic Activity

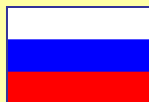
About the Arctic



Finland
Arctic
Strategy



Canada National
Arctic Policy



Russian
Arctic
Strategy



Arctic Council
Reaffirms
UNCLOS



Arctic Council
SAR Agreement

Within the Arctic



Chinese
research
cruise



US & Other
International
Research



Vigilant Eagle 2010



Arctic Crossroads 2010



Multiple NSR transits



US-CAN ECS survey



NWP cruise
Ship & Oil Tanker
groundings



Russian Oil
Tankers Collide



Navy is engaging with Arctic & non-Arctic countries



Navy Accomplishments: April 2010 – April 2011

Education



Naval Post Graduate
School Arctic Science
& Security theses



Arctic science
& security
Study topics
at US Naval
Academy



Naval War College
courses address
Arctic Science &
Security Topics

Studies & Assessments



Naval Arctic
Mission Analysis



Naval Studies
Board study



Naval Arctic
Capability Based
Assessment

Outreach & Engagement



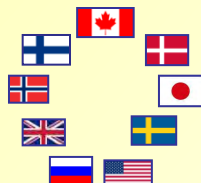
NSS
Interagency
Policy
Committee



State
Department
Arctic Policy
Group



Conferences,
Symposia,
Media events



Leadership
visits &
staff talks

Policy, Strategy, & Plans



Support
Arctic Section
In 2010 UCP



Navy
Arctic
Strategic
Objectives

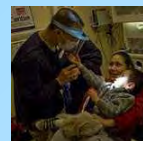


USN-USCG
Arctic Activity
Plan

Operations & Training



Navy-NOAA
Bering Strait
Survey



Arctic Care 2010



ICEX 2011



USS Taylor Port
Visit to Murmansk



Pacer Goose



Operation
NANOOK/NATSIO

Science & Research



NRL
Kara Sea
Research cruise



Interagency partnership
For air-ocean-ice
numerical prediction



Science Ice
Exercise Plan

Improve understanding

Ensure readiness (resilience)



Navy Activity On and Under the Ice

Technology Demonstrations – ICEX-11



Aerial resupply



SSN 778 surfaced



Ice-mining



VIP visit

Interagency Research Efforts – Operation Ice Bridge 2011



Greenland Ice Sheet





Naval Studies Board Recommendations

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine
NAVAL STUDIES
BOARD



***Support ratification
of UNCLOS***



***Address naval coastal
installation vulnerabilities***



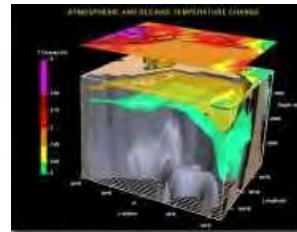
***Prepare for increase
in HA/DR, Arctic missions***



***Address emerging technical
requirements (e.g. polar ops)***



***Address partnership
demands***



***Support research &
development***

Navy action is already underway



Arctic Military Roundtable

- Share what Defense Forces are doing to adapt to climate change, retain military mission capability resilience, and adapt to changing missions
- Build relationships and reduce regional tensions.



Avoid Perception of “Militarizing” the Arctic



Some Final Thoughts ...





Discussion



facebook.com/NavyTFCC